

# SILVER WATER ASSOCIATION (PWSNO 1280173) SOURCE WATER ASSESSMENT REPORT

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November 20, 2001



## State of Idaho Department of Environmental Quality

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## SOURCE WATER ASSESSMENT FOR SILVER WATER ASSOCIATION

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within the well recharge zone, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Silver Water Association* describes the public drinking water source, potential contaminant sites located within the well recharge zone boundaries, and the susceptibility (risk) that may be associated with any potential contaminants. DEQ used a refined computer model approved by the EPA to map the boundaries of the well recharge area into time of travel zones indicating the number of years necessary for a particle of water to reach a well. The computer model for wells on the Rathdrum Prairie Aquifer used data assimilated by DEQ from a variety of sources including well logs in the vicinity of the Silver Water Association well.

This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

**Potential Contaminant Inventory.** The Silver Water Association well, located near the northeast corner of 5<sup>th</sup> Street and Pend Oreille Drive in Bayview, Idaho, serves a total of 22 seasonal and year round homes. The recharge zone DEQ delineated for the well is a narrow corridor encompassing about 5.5 acres and stretching approximately a quarter of a mile eastward from the well to the edge of the Rathdrum Prairie Aquifer defined by Lake Pend Oreille. The estimated time of travel from the edge of the aquifer to the well is three years or less. Land use inside the delineation boundaries is primarily residential. A map showing the location of the well, the well recharge zone, and potential contaminant sites in the vicinity is on page 6 of this report.

Potential contaminant sources documented inside the well recharge zone include:

1. A sealed septic tank that is part of the Bayview municipal sewer system located about 50 feet south of the well. The tank is not in compliance with *Idaho Rules for Public Drinking Water Systems* because Silver Water Association has not yet signed a waiver agreement. The waiver agreement includes performance guarantees monitored by periodic leak testing. Because the tank is not in compliance, the susceptibility analysis for your well treats it like any other potential contaminant source encroaching on the sanitary setback zone: the well is automatically ranked highly susceptible to contaminants associated with septic tanks--nitrates and microbials.

2. An ephemeral creek, about 100 to 130 feet from the well. This is outside the sanitary setback zone, but within the one-year time of travel zone. Surface water outside of the sanitary setback zone is not counted as a significant potential contaminant source for the purposes of source water assessment unless the well is hydraulically connected to the surface water. Silver Water System has not completed ground water under direct influence of surface water (GWUDI) testing. When results are uncertain, conservative scores are assigned in this portion of the analysis.

**Water Quality History.** Silver Water Association, under regulation as a non-community transient public water system, is required to monitor quarterly for bacterial contamination. All samples tested since 1992 have been negative for total coliform bacteria. Nitrate concentrations have ranged between 0.337 and 2.6 mg/l. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. The system also tests regularly for sulfate, an unregulated contaminant. With the exception of a sample tested in January 1997 showing an undetectable level of sulfate, concentrations of the chemical have ranged from 10 to 14 mg/l since 1995.

The Silver Water association well has been monitored for more than 20 years as a Panhandle Health District aquifer-sampling site. Between 1980 and 1985 the volatile organic compound Trichloroethylene (TCE) was present in concentrations ranging between 1.6 and 8 µg/l, with only one quarterly sample testing below the minimum detection level. TCE is a solvent and degreaser. Between 1985 and 1990, there were several quarters when the concentration of TCE was below the minimum detection level and the concentration in all the positive samples was less than 1.0 µ/l. TCE was present in samples tested in 1993, 1994 and 1995 in concentrations ranging between 0.22 and 3.69 µ/l. The Maximum Contaminant Level (MCL) for TCE is 5 µ/l.

Tetrachloroethylene, a solvent found in products such as auto brake cleaners, suede protectors, water repellents, and silicone lubricants, was present in Silver Water Association samples in concentrations between 0.03 µg/l and 1.35 µg/l in 1993, 1994, 1995, and 1999. The MCL for Tetrachloroethylene is 5.0 µg/l. Repeated detections of volatile organic chemical automatically trigger a high susceptibility ranking for this class of contaminants in the susceptibility analysis program.

**Well Construction.** The Silver Water Association well was drilled at an unknown date to a reported depth of 110 feet. The pump is set at 100 feet with the static water level 80 feet below ground surface. The well log is not on file with DEQ, so details about the extent of the casing and surface seal, and the soil strata at the well site are unknown.

The sanitary survey of Silver Water Association system conducted in June 1999 noted that the well casing needs to be extended at least 12 inches above grade to be in conformance with state regulations. The well is encased in a concrete block building built on sloping ground. A floor drain on the downhill side of the well house provides protection from flooding with standing water.

**Well Site Characteristics.** Soils in the well recharge zone are generally well drained. Well-drained soils provide little protection against migration of contaminants toward the well. The soil structure above the water table in the well is unknown because the well log is not available.

**Susceptibility to Contamination.** A susceptibility analysis of the Silver Water Association well, incorporating information from the public water system file and the potential contaminant inventory, ranked the well highly susceptible to inorganic chemical contamination (especially nitrate) and microbial contamination because of the proximity of a non compliant septic tank to the well.

Based on Panhandle Health District aquifer sampling results, the Silver Water Association well is also highly susceptible to volatile organic chemical contamination.

The susceptibility to synthetic organic contaminants is in the moderate range. Most of the points marked against the well come from the system construction and hydrologic sensitivity portions of the susceptibility analysis. The susceptibility analysis worksheet for your well on page 7 this report shows how your well was scored. Formulas used to compute the final susceptibility scores are at the bottom of the worksheet.

While many of the factors used to assess vulnerability to contamination are unknown because the Silver Water Association well log is unavailable, the scores assigned to your well are in line with scores for other wells on the Rathdrum Prairie Aquifer where the composition of the soil above the water table is known. Typical well logs record sand, gravel and cobbles without a significant clay layer to retard vertical transport of contaminants.

**Source Water Protection.** This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Silver Water Association source water protection activities should focus first on bringing the well into compliance with *Idaho Rules for Drinking Water Systems*. The well needs to be tested to determine whether surface waters of the small creek running beside 5th Street directly influence it.

Because the water system may not have direct jurisdiction over the entire recharge zone for its well, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. The 186 public water systems in Idaho that draw water from the Rathdrum Prairie Aquifer should consider forming a regional group to represent their interests before state, county and municipal governing bodies when regulatory tools like zoning overlays, or enactment of building codes are the most appropriate ground water protection measures.

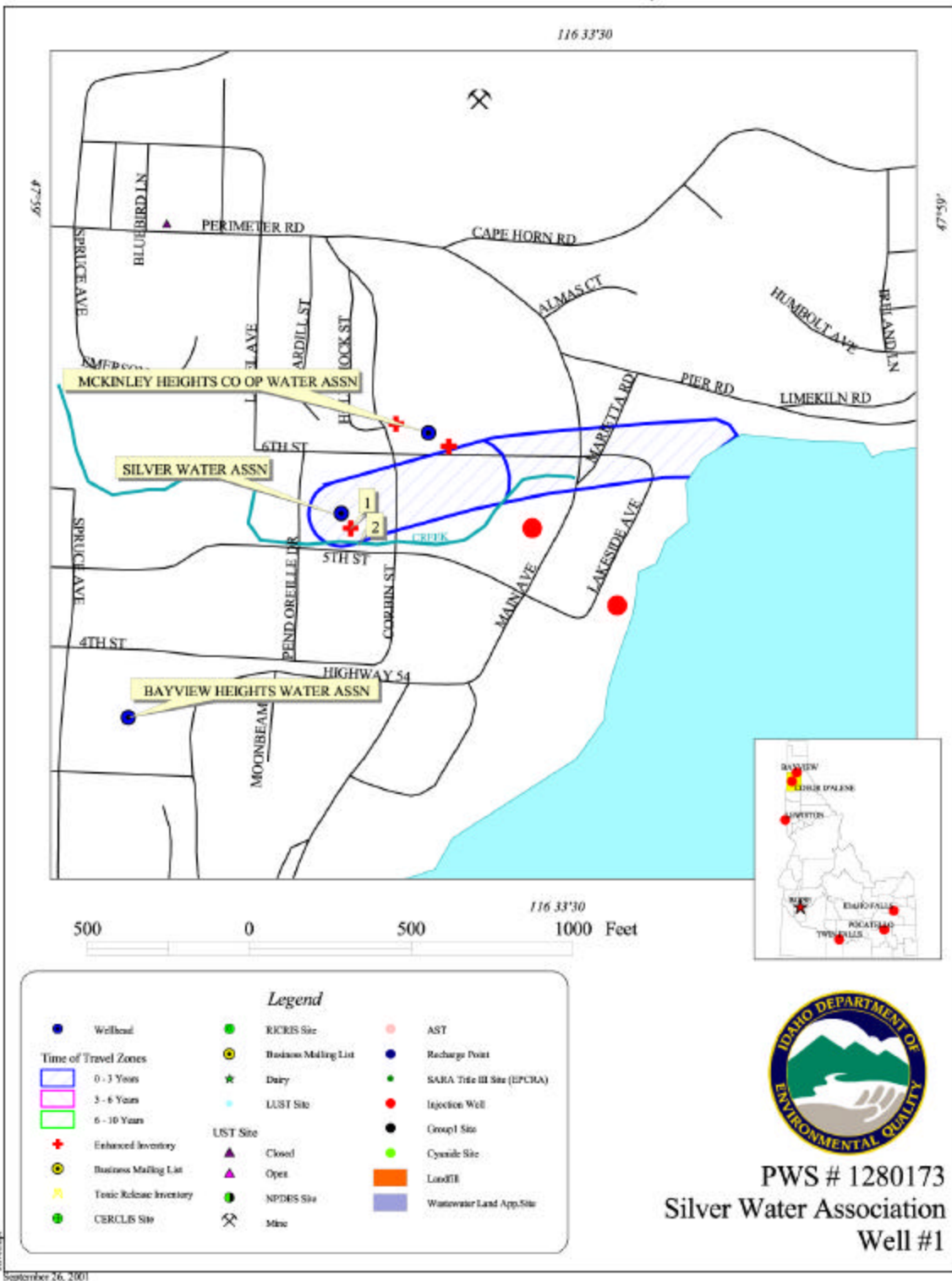
The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

**DEQ website:**

<http://www.deq.state.id.us>

Silver Water Association Delineation and Potential Contaminant Inventory.



## Ground Water Susceptibility

Public Water System Name : **SILVER WATER ASSN**  
Public Water System Number : **1280173**

Well # : **WELL #1**  
11/7/01 10:44:54 AM

| 1. System Construction   |                                 |                                   | SCORE |       |       |           |
|--|---------------------------------|-----------------------------------|-------|-------|-------|-----------|
| Drill Date   | UNKNOWN                         |                                   |       |       |       |           |
| Driller Log Available  | NO                              |                                   |       |       |       |           |
| Sanitary Survey (if yes, indicate date of last survey)               | YES                             | 1999                              |       |       |       |           |
| Well meets IDWR construction standards                               | UNKNOWN                         |                                   |       | 1     |       |           |
| Wellhead and surface seal maintained                                 | YES                             |                                   |       | 0     |       |           |
| Casing and annular seal extend to low permeability unit              | UNKNOWN                         |                                   |       | 2     |       |           |
| Highest production 100 feet below static water level                 | NO                              |                                   |       | 1     |       |           |
| Well protected from surface runoff                                   | YES                             |                                   |       | 0     |       |           |
| Total System Construction Score                                      |                                 |                                   |       | 4     |       |           |
| 2. Hydrologic Sensitivity  |                                 |                                   |       |       |       |           |
| Soils are poorly to moderately drained                               | NO                              |                                   |       | 2     |       |           |
| Vadose zone composed of gravel, fractured rock or unknown            | UNKNOWN                         |                                   |       | 1     |       |           |
| Depth to first water > 300 feet                                      | NO                              |                                   |       | 1     |       |           |
| Aquitard present with > 50 feet cumulative thickness                 | UNKNOWN                         |                                   |       | 2     |       |           |
| Total Hydrologic Score   |                                 |                                   |       | 6     |       |           |
|  |                                 |                                   | IOC   | VOC   | SOC   | Microbial |
| 3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)     |                                 |                                   | Score | Score | Score | Score     |
| Land Use Zone 1A   | URBAN/RESIDENTIAL               |                                   | 2     | 2     | 2     | 2         |
| Farm chemical use high   | NO                              |                                   | 0     | 0     | 0     |           |
| IOC, VOC, SOC, or Microbial sources in Zone 1A                       | YES                             | Septic Tank, VOC sampling results | YES   | YES   | NO    | YES       |
| Total Potential Contaminant Source/Land Use Score - Zone 1A          |                                 |                                   | 2     | 2     | 2     | 2         |
| Potential Contaminant / Land Use - ZONE 1B (0-3 year Time of Travel) |                                 |                                   |       |       |       |           |
| Contaminant sources present (Number of Sources)                      | YES                             | Stream                            | 1     | 1     | 1     | 1         |
| (Score = # Sources X 2 ) 8 Points Maximum                            |                                 |                                   | 2     | 2     | 2     | 2         |
| Sources of Class II or III leacheable contaminants or Microbials     | YES                             |                                   | 1     | 1     | 1     |           |
| 4 Points Maximum   |                                 |                                   | 0     | 0     | 0     |           |
| Zone 1B contains or intercepts a Group 1 Area                        | NO                              |                                   | 0     | 0     | 0     | 0         |
| Land use Zone 1B   | Less Than 25% Agricultural Land |                                   | 0     | 0     | 0     | 0         |
| Total Potential Contaminant Source / Land Use Score - Zone 1B        |                                 |                                   | 3     | 3     | 3     | 2         |
| Cumulative Potential Contaminant / Land Use Score                    |                                 |                                   | 5     | 5     | 5     | 4         |

**4. Final Susceptibility Source Score** **11** **11** **11** **12**

**5. Final Well Ranking** **High\*** **High\*** **Moderate** **High\***

**\*High--Source automatically ranked highly susceptible due to presence of a contaminant source inside the Sanitary Setback zone, or the presence of a contaminant in the tested well water.**

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

### Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

## POTENTIAL CONTAMINANT INVENTORY

### LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.